

The Enhancement of Leg Muscle Strength by Back Half Squat and Leg Extension Practice towards Long Range Kicking Ability of Soccer Player

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Abstract--- *The purpose of this study is to measure how influential the enhancement of leg muscle strength by back half squat and leg extension practice towards long range kicking ability of Sea Horse soccer player. The population is all soccer player in "PS Seahorse Partners" soccer association. 20 respondents as sample were picked by "Random Sampling" technique. Sample is divided into two group through "Matched Ordinal Pairing" technique in which 10 respondents for leg muscle strength exercise with half squat and other 10 respondents do leg extension exercise (comparison). Used method in this research is experimental method, "randomized control group pre-test ad post-test design" as the research design. Research instrument used in this research is "kick ability test". To examine the hypothesis t-test is used based on two independent samples by real standard $\alpha=0,05$. T-test score obtained from the calculation result using t-test statistics is $t_{ob} = 10,66$. While score obtained from t table critical score with real standard $\alpha = 0,05$; n_1+n_2-2 is as $t_{tab} = 2,101$. This fact shows that $t_{ob} = 10,66 > t_{tab} = 2,101$, so zero hypothesis (H_0) is refused and accepting the alternative hypothesis (H_a), which clarifies that the ability average of long range kick in back half squat exercise group that treated by leg muscle strength exercise is bigger than the ability average leg extension exercise group. So, the finding shows that leg muscle strength exercise with back half squat is better in enhancing the log range kicking ability of Seahorse Partners soccer player compared to leg extension exercise group.*

Keywords--- *Leg Muscle Strength; Back Half Squat; Leg Extension; Long Range Kicking.*

I. INTRODUCTION

Soccer can be easy it is done simple way and as best as one can. It is better if soccer is undertaken with burden so the achievement, of course, will not be as it should be. Soccer as a team match in which each team consists of eleven players. So, a best soccer team consists of best players. Basically, players must master the basic techniques well so that it can be easier in enhancing the ability in plating as well as to be first rate player.

The available potential must be the prior attention to the government, advisor as well as soccer coach to be enhanced. But, in order to be successful in sport, insufficient of media, infrastructure, funding, professional advisor and

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coach have often become issue. There are many coaches that only rely on their experience while they were soccer players and not provided with supporting knowledge to increase the achievement, such as knowledge about exercise, nutrient, psychology etc. The discipline has to be mastered by the coach, moreover soccer as a type of team sport consists of varied characters player.

As the matter of fact, it has been often found in “PS Seahorse Partners” soccer association that those who really wanted to play were not sufficiently capable. Moreover, many players could not hold out for 2 x 45 minutes match. It was caused by weak leg muscle, or when they did kick the ball but miss the target and also, they did kick but the ball did not go to where it was targeted because of less powerful kick.

The strength of leg muscle is necessarily needed in any sport types particularly soccer especially in doing the long range kick. So, in kicking the ball to the target requires maximal power of leg muscle, if an athlete or player does not have strong leg muscle, of course, the achievement cannot be achieved as expected. In soccer match, power in doing the job which is kicking the ball, contraction will be taking place on muscle.

In staking out a good exercise program, so that the athlete avoids the unwanted factors in reaching the achievement, (Achmad, 2011) states that “exercise is a physical movement and mental activity that has to be undertaken systematically and repetitively in long duration with level increasing progressively and individually in order to recondition the system and physiological body function so that optimal performance can be achieved while doing sport.

Exercise is a systematic process of train or work one repeatedly with the increasing of burden or job as one gets to the higher level. In doing an exercise, an athlete needs a clear exercise program because it is crucial in order to do exercise program. Exercise program is a process of preparation in facing the implementation and in completing the report that is beneficial to support the exercise. After an athlete followed the exercise then a settled exercise program is needed. (Suharno, 1993) said, “Exercise program plan is one to the strategies of the coach to achieve as optimal as can in the future”.

Leg muscle strength can be improved by the appropriate of varied methods as well was various exercise types. In relation to this research, so the researcher wants to utilize sufficient form of exercise to support the strength of leg muscle. The form of exercises meant by the researcher are: back half squat and leg extension. Both of these exercises are able to improve the strength such as; quadriceps muscle, gluteus maximus, hamstring, erector spinae, abdominal, deltoids, trapezius, upper, biceps, radial and flexor.

Noticed from various opinion above, one of physical condition elements particularly leg muscle is needed by an athlete in a match, especially in soccer. In this case, proper and correct kicking technique really determines the successful of a team during the match, beside it needs specific and repeated exercise for an accurate and well kick. Nowadays, a soccer team sometimes does the short time preparation as days are getting closer to the match day, it cause the players are only focused in technical and tactical factor.

In soccer, muscle strength is necessarily needed to assist athlete doing the long range kick. The dominant supporting elements is physical readiness particularly strength and endurance factor, it was seen in “PS Seahorse Partners” soccer player that had lack in term of physical quality especially leg muscle strength.

Looking at the fact going on in “PS Seahorse Partners”, where the players seem not having the ability of better long range kick, it was seen while they were doing kick and not reaching the target, and not having good strength of leg muscle for maximal result was not seen when the kicked. This reality shows lack of exercise and self-understanding of the player themselves about the influence of leg muscle strength towards the ability of long range kick in soccer match.

If this situation remains happening so there will be big possibility for the unsuccessful soccer achievement of “PS Seahorse Partners”. Therefore, the researcher does the research on how influential the exercise of leg muscle strength by back half squat and leg extension towards the ability of long range kick in “PS Seahorse Partners” players’ match is.

II. METHODOLOGY

The method used in this research was experimental research, used research design was “randomized control group pre-test and post-test design” (Arikunto, 2002) With design as shown below:

Table 1. Research Design

	Group	Pre-Test	Treatment	Post-Test
R	A	X^1	T	x_1^2
	B	X^2	-	x_2^2

R = Random

A = Back Half Squat Exercise Group

B = Leg Extension Exercise Group

X^1 = Pre-test before back half squat exercise

X^2 = Pre-test before leg extension exercise

x_1^2 = Post-test after back half squat exercise

x_2^2 = Post-test after leg extension exercise

The ability of long range kicking is player’s ability to kick the ball as far as possible which in this research means the longest range as the result of a player or a kid tries to kick from the start. The score is the longest range from two attempts using the inner side of the leg. The exercise program of leg muscle strength meant in this research is a type of exercise given to a child to tri doing the exercise systematically, by putting more burden in certain point of time. The exercise program giver for the leg muscle exercise was back half squat and leg extension done in 3 months with frequency three times a week.

The population is all soccer player in “PS Seahorse Partners” soccer association. 20 respondents was taken by “Random sampling” technique. Sample is divided into two groups by ”Matched ordinal pairing” technique in which 10

respondents of each groups will do exercise for leg muscle by back half squat and other 10 respondents by leg extension (comparison).

The research instrument used in this research was “test of kicking ability” (Achmad, 2011) while the media used was as follow: field, ball, pole, rope, measuring tape, whistle, and stationery.

To obtain the data about the ability of long range kick, these following steps were taken: (1) the ball is motionless, (2) player or student tries to stand in 3 to 5 steps backward next to the ball, (3) sight towards the ball (4) player or student runs forward, (5) ball is bounced kicked, (6) the longest kick from two attempts becomes the data of research finding.

To examine the hypothesis t-test was used based on two independent sample with real standard/level $\alpha=0,05$ (Indrayana, 2012).

III. RESULTS AND FINDINGS

After assumption test was done that the sample taken from the normal distributing population and followed by the homogeneity test that both sample groups are homogeneous, so the hypothesis examination can be continued to computation result by using t-test statistic that obtain the t value as $t_{ob} = 10,66$. While from critical value table with real standard/level $\alpha = 0,05$; n_1+n_2-2 t-table value/score as $t_{tab} = 2,101$ was obtained. This reality shows that score $t_{ob} = 10,66 > t_{tab} = 2,101$, thus Null Hypothesis (H_0) was rejected and allternative hypothesis was accepted.

T-test know based on the criteria test that states that reject H_0 if $t_{ob} >$, this thing indicates that in the investigation H_0 was rejected thus H_a was accepted that states that the average ability of long range ball kicking in exercise group of back half squat gains treatment with exercise program for leg muscle strength is bigger than the average ability of long range ball kicking over Seahorse Partners soccer player if it is compared to the exercise group of leg extension.

From the analysis result of data normality test by using the Lilliefors statistic test shows that the sample take from bot group, either back half squat exercise group as well as leg extension exercise group from the normal distributing population.

Same as in homogeneity test in which both samples show the homogenous or same variants, this means that before having different treatment, both sample groups do have same capability so if changes happen merely by the factors of same treatment or exercise which is treatment through leg muscle exercise program either through back half squat exercise as well as leg extension exercise.

From the presentation of long range ball kicking seen that the earlier condition or pre-test and latest condition or post-test from both groups had difference in terms of the gained grade on the ability of long range kicking. The finding shows that the pre-test condition of both groups did not indicate significant difference, but at the post-test condition both groups showed considerable difference, where the post-test score of long range ball kicking with back half squat is better than what gained by the leg extension.

This happening shows that exercise program of leg muscle from those two back half squat and leg extension given for eight weeks with exercise frequency three times a week can provide the considerable effect in the enhancement of

both exercise models, show that the exercise group that utilizes the back half squat was more effective in enhancing the ability of long range ball kicking compared to leg extension exercise.

The fact above is reinforced by the computation result of the t-test statistical analysis, where the result of $t_{ob} = 10,66 > t_{tab} = 2,101$ so that H_0 is rejected and H_a is accepted clarifies that the average capability of long range kicking on back half squat exercise group for leg muscle strength has greater improvement from the average ability of long range kicking on leg extension exercise group.

Thus, this research shows that there is distinguished effect on leg muscle strength exercise program namely back half squat exercise and leg extension exercise given during eight times with three times a week of frequency toward the enhancement of long range kicking ability of Seahorse Partners soccer player.

IV. CONCLUSION

From research finding, it is proven by the implementation of the exercise and analysis data examination based on measured variable, so it can be concluded that there is distinguished effect towards the enhancement of long range kicking ability of Seahorse Partners soccer player.

SUGGESTION:

This research finding is expected to be beneficial in terms of advices on the following points:

1. This can be an input to the advisors, coaches, and athletes as well as soccer fan as an effort to sport development and cultivation especially in the development of Sport Training Education.
2. In training, this can be meaningful input to choose the appropriate exercise program in enhancing the long range kicking ability in soccer match.
3. In training, to notice the influential factors that may can affect the physiological aspect relating to the training program, such muscles at lower extrimity, the heaviness, relating to the joints/ligament in knee, and others.
4. This finding can be additional information to next researcher future.
- 5.

ACKNOWLEDGMENT

The author would like to say thank you to Rector of Universitas Negeri Manado, Ministry of Research, Technology and Higher Education for supporting the research.

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